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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/320,077 05/26/99 NOTTE

P SOLU113

EXAMINER

IM52/0720

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ART UNIT

PAPER NUMBER

10

1754

DATE MAILED:

07/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09-320,077

Applicant(s)

NOTTE ET AL.

Examiner

VANDY

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) ^{MAILED} filed on MAY 22, 2001
- ☒ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1 - 30 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1 - 30 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 1754

DETAILED ACTION

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 C.F.R. 1.67(a) identifying this application by application number and filing date is required. See M.P.E.P. §§ 602.01 and 602.02.

The oath or declaration is defective because non-initialed and/or non-dated alterations have been made to the inventor's typed name "Greg Croce". See 37 CFR 1.52(c).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

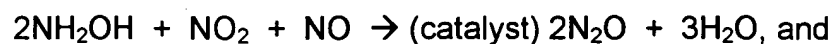
Art Unit: 1754

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. The Applicants are advised of the obligation under 37 C.F.R. 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-30 are again rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent Document No. 83,974 (hence "German-974") in view of U. S. Pat. No. 4,351,811 to Matsuda et al.

The English abstract of German-974 discloses a process for the purification of nitrous oxide gas contaminated with higher nitrogen oxides (evidently, nitrogen monoxide and nitrogen dioxide) and oxygen (please see the paragraph under the "Use/Advantage" header), by (evidently) reacting the nitrogen oxides and oxygen within the nitrous oxide gas with hydroxylamine according to the reactions:



Art Unit: 1754

The catalyst is reported to be a platinum group metal (please see the paragraph under the "New" and "Examples" header).

While the English abstract of DD 83, 974 under the paragraph titled SPECIFIC DETAILS reports the use of a solution containing 5-175 (esp. 50) g/l. of NH_2OH as the reducing agent, it is submitted that the substitution of the well known reducing agents set forth in the Applicants' claims (i. e. the hydrogen, ammonia, etc.) in lieu of the other well known reducing agent set forth in the applied DD 83,974 reference (i. e. the hydroxylamine of the English abstract of DD 83,974) into the same process described in DD 83,974 is obvious because it is fully expected that one of ordinary skill in the art is well aware of the equivalent properties of the Applicants' "ammonia", "hydrogen", etc. and the "hydroxylamine" of DD 83,974 to act and function as reducing agents, as evinced by the disclosure set forth in reaction (2) in U. S. Pat. 4,351,811: $\text{NO} + \text{NH}_3 + 1/4\text{O}_2 \rightarrow \text{N}_2 + (3/2)\text{H}_2\text{O}$ set forth in col. 1: please see the discussion of the court decisions set forth in the section titled SUBSTITUTING EQUIVALENTS KNOWN FOR THE SAME PURPOSE set forth in section 2144.06 in the MPEP (Rev. 1, Feb. 2000) for further details.

The difference between the Applicants' claims and German-974 is that the Applicants' claims call for passing the nitrous oxide gas through a (different) selective reduction catalyst (oxides of vanadium and/or titanium) so that the catalyst promotes the reaction between ammonia or ammonia precursors and nitrogen oxides in the nitrous oxide gas.

Art Unit: 1754

The Matsuda et al. patent describes a process for removing nitrogen monoxide and ammonia out of gases emitted from a variety of industrial plants and processes (please see col. 1 lns. 6-12) by contacting the gas with a catalyst titanium oxide and another oxide which may be vanadium oxide so that the nitrogen oxides and ammonia react together to form nitrogen and water (please see col. 1 ln. 67 to col. 2 ln. 5 as well as col. 2 ln. 45 to col. 3 ln. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made *to modify* the process described in the English abstract of German-974 *by including* the titanium oxide catalyst described in col. 1 ln. 67 to col. 2 ln. 5 and col. 2 ln. 45 to col. 3 ln. 2 in the Matsuda et al. patent, as required in the Applicants' claims, *because* of the expected advantage of removing any nitrogen oxides (and any ammonia) remaining in the nitrous oxide gas of German-974 with a catalyst which has an activity for the reaction between NO and NH₃ that is very excellent (please see col. 2 lns. 4-5 in the Matsuda et al. patent).

The limitations set forth in the other claims (describing the source of the gas to be treated; the content of the contaminants in the gas before and after treatment; the number of reactors used, etc. . .) are noted, but are submitted to have been obvious to one of ordinary skill in the art at the time the invention was made in as much as it is expected to be well within the skill level of the person having ordinary skill in the art to readily determine the source of the gas to be treated; the content of the contaminants in the gas before and after treatment; the number of reactors used, etc. .

Art Unit: 1754

Response to Arguments

The Applicants' arguments submitted in their Amendment mailed on May 22, 2001, which has been filed as paper no. 8, have been fully considered but they are not persuasive.

a) *The Applicants comment that upon receiving notification that the application contains allowable subject matter, the Applicants will prepare and file a supplemental declaration.*

The objection to the oath is maintained since the corrected oath has not yet been submitted.

b) *The Applicants argue that they have amended their claim 1 to recite that the reducing agent is selected from the group consisting of hydrogen, carbon monoxide and ammonia and mixtures thereof. German Pat. Doc. No. 83,974 discloses the use of hydroxylamine.*

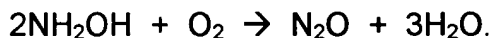
While the English abstract of DD 83, 974 under the paragraph titled SPECIFIC DETAILS reports the use of a solution containing 5-175 (esp. 50) g/l. of NH_2OH as the reducing agent, the 103 rejection is maintained because it is submitted that the substitution of the well known reducing agents set forth in the Applicants' claims (i. e. the hydrogen, ammonia, etc. of Applicants' claim 1) in lieu of the other well known reducing agent set forth in the applied DD 83,974 reference (i. e. the hydroxylamine of the English abstract of DD 83,974) into the same process described in DD 83,974 is

Art Unit: 1754

obvious because it is fully expected that one of ordinary skill in the art is well aware of the equivalent properties of the Applicants' "ammonia", "hydrogen", etc. and the "hydroxylamine" of DD 83,974 to act and function as reducing agents, as evinced by the disclosure set forth in reaction (2) in U. S. Pat. 4,351,811: $\text{NO} + \text{NH}_3 + 1/4\text{O}_2 \rightarrow \text{N}_2 + (3/2)\text{H}_2\text{O}$ set forth in col. 1: please see the discussion of the court decisions set forth in the section titled SUBSTITUTING EQUIVALENTS KNOWN FOR THE SAME PURPOSE set forth in section 2144.06 in the MPEP (Rev. 1, Feb. 2000) for further details.

c) *The Applicants argue that DD 83,974 uses the hydroxylamine to react with various components to form additional nitrous oxide (N_2O), whereas the Applicants use the reducing agent simply to remove the oxygen out of the gas without significantly reducing the amount of nitrous oxide (N_2O) present in the gas.*

No distinction is seen or has been shown since DD 83,974 also uses the NH_2OH reducing agent to simply remove O_2 out of the gas without significantly reducing the amount of nitrous oxide (N_2O) present in the gas, as evinced by reaction (3) set forth in the English abstract of DD 83,974:



d) *The Applicants argue that their claim 28 calls for the NO_x to react with NH_3 , not the NH_2OH of DD 83,974.*

No distinction is seen or has been shown between the 'precursor of ammonia' set forth in Applicants' claims 19 and 28 and the " NH_2OH " of DD 83,974.

Art Unit: 1754

No unobvious distinction is seen or has been shown between the "ammonia" of Applicants' claims 19 and 28 and the " NH_2OH " of DD 83,974 in as much as it is submitted that the substitution of the well known ammonia reducing agent set forth in Applicants' claims 19 and 28 in lieu of the other well known hydroxylamine reducing agent set forth in the applied DD 83,974 reference into the same process described in DD 83,974 is obvious because it is fully expected that one of ordinary skill in the art is well aware of the equivalent properties of the Applicants' "ammonia", "hydrogen", etc. and the the "hydroxylamine" of DD 83,974 to act and function as reducing agents, as evinced by the disclosure set forth in reaction (2) in U. S. Pat. 4,351,811: $\text{NO} + \text{NH}_3 + 1/4\text{O}_2 \rightarrow \text{N}_2 + (3/2)\text{H}_2\text{O}$ set forth in col. 1: please see the discussion of the court decisions set forth in the section titled SUBSTITUTING EQUIVALENTS KNOWN FOR THE SAME PURPOSE set forth in section 2144.06 in the MPEP (Rev. 1, Feb. 2000) for further details.

THIS ACTION IS MADE FINAL. The Applicants are reminded of the extension of time policy as set forth in 37 C.F.R. 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 1754

extension fee pursuant to 37 C.F.R. 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Pg. 295 in Grant and Hackh's Chemical Dictionary (5th ed.) defining hydroxylamine as a reducing agent is made of record.

Any inquiry concerning this communication should be directed to Timothy C. Vanoy at telephone number 703-308-2540.

Timothy Vanoy/tv

03 May 2000

17 July 2001


Timothy Vanoy

Patent Examiner

Art Unit 1754


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